

attaches to a tubular extension 88, to which a dust removal system or vacuum cleaner may be attached. Alternatively, a short hose or length pipe may be attached to tubular extension 88 and terminated in a dust bin. With such an arrangement and positioning of sub-fences 28 and 30 as described above, most material removed from workpiece 90 will be driven into the receiving bin.

As will be appreciated by those skilled in the art, in many routing or shaping operations, including, in particular, formation of ornamental edges on workpieces, sub-fences 28 and 30 should desirably be located in the same vertical plane. However, by positioning the surface of infeed sub-fence 30 within the cutting radius of a straight cutter 40, as shown in FIG. 3B, and positioning the surface of outfeed sub-fence 28 in alignment with the same cutting radius of cutter 40, it is possible to use the router table fence system 10 of the present invention for edge jointing. As will be appreciated by one skilled in the art by reference to FIG. 3B in particular, this will result in removal from a workpiece of a small amount of material and will provide an appropriately positioned outfeed reference surface.

In the present invention, such relative positioning of the sub-fences 28 and 30 may be rapidly and accurately accomplished by dropping a jointing spacer 33 (shown in FIG. 1 exploded away from the system 12) into position between outfeed sub-fence 28 and lower spar 24. Jointing spacers 33 may be made of a variety of materials and in a variety of thicknesses. The materials may include wood, metal and plastic. As can be seen in FIGS. 3 and 3B the amount of material removed from a workpiece in such a jointing operation is established by the thickness "y" of the jointing spacer 33.

FIG. 7 illustrates safety shield 100 affixed directly to the front face 102 of fence 12 by passing screws 104 through washers 105 and vertical slots 106 in the vertical arm 108 of shield 100 and into T-nuts 110 received in a T-slot 32. This fixes vertical arm 108 of shield 100 directly against the front face 102 of fence 12 so that horizontal arm 112 of shield 100 extends horizontally out from the front face 102 of fence 12 above a router cutter (not shown) positioned immediately adjacent to fence 12 (or partially surrounded by fence 12). Safety shield 100 may be made of polycarbonate or acrylic plastic or a variety of other suitable materials, although transparent materials are preferable.

When safety shield 100 is used with fence 12 with sub-fences 28 and 30 (or the cutter is for some other reason spaced out from the front face 102 of fence 12), stand-off spacers 114 may be used with longer screws 116 as illustrated in FIG. 8 to appropriately position shield 100.

A hold-down assembly 120 may be easily positioned on fence 12 by affixing the body 122 to the top 124 of fence 12 by passing body cap screw 126 through body 122 and in to a tee-nut 110 in the T-slot 32 on the top 124 of fence 12, as illustrated in FIG. 9. Body 122 grasps two arms 128 and 130, each of which are round rods. Top spring arm 128 grasps, in a slot 132 in one end of arm 128, a top spring 134, which is a leaf spring having a curved end 136 positioned to press against the top of a workpiece (not shown) to urge it against the router table top 42. Arm 128 may be rotated within body 122 to increase or decrease the pressure exerted on a workpiece by spring 134.

Side spring arm 130 is also held within body 122 by positioning arm 130 in a bore 123 through body 122 and fixing it in position with a forward cap screw 127 threaded into body 122 to press against arm 130, permitting arm 130 to be moved in a direction normal to the front face 102 of

fence 12. Side spring arm 130 has a transverse bore 138 that receives side spring post 140, which is fixed in position with a post screw 142 threaded into the end of arm 130 so that it intersects bore 138 and presses against post 140. Side spring 144 is fixed in a slot 146 in the lower end of post 140. Side spring 144 is a leaf spring similar to top spring 134, and it has a similar curved end 148 that is positioned to press against the side of a workpiece (not shown) opposite the front face 102 of fence 12 to thereby maintain constant contact between the fence and the workpiece during machining of the workpiece.

The router table fence and accessories of the present invention are not confined to the embodiments described herein but include variations and modifications within the scope and spirit of the foregoing description, the accompanying drawings and the following claims.

We claim:

1. A router table fence for use with a router table top, comprising:

- (a) a top spar having a first length and a front face,
- (b) two bottom spars having front faces, and
- (c) connectors for attaching the bottom spars to the top spar so that:
 - (i) the front faces of each of the top spar and the two bottom spars are in substantially the same plane and
 - (ii) opposed ends of the two bottom spars may be positioned either:
 - (x) abutting, or
 - (y) separated by a selected distance.

2. The router table fence of claim 1, further comprising two sub-fences, one of which is attached to the front face of each of the bottom spars, and each of which sub-fences has a working face for contact with workpieces.

3. The router table fence of claim 2, wherein the sub-fences are made of a material that can be machined with a router cutter.

4. The router table fence of claim 1, wherein the cross-sectional shape of each of the top and bottom spars is substantially identical.

5. The router table fence of claim 1, wherein the cross-sectional shape of each of the top and bottom spars is substantially a rectangle.

6. The router table fence of claim 1, wherein the cross-sectional shape of each of the top and bottom spars is substantially a square.

7. The router table fence of claim 1, wherein one of the top spar or the bottom spars has at least one rib that may be received in a depression in the other of the bottom spars or the top spar so that the bottom spars may slide longitudinally relative to the top spar while the bottom spars maintain vertical alignment relative to the top spar and each other.

8. The router table fence of claim 1, further comprising means for engaging the bottom spars with the top spar so that the bottom spars may slide longitudinally relative to the top spar while maintaining vertical alignment relative to each other.

9. The router table fence of claim 2, further comprising means for positioning the working face of one of the sub-fences in a plane parallel to but displaced from the plane within which the working face of the other sub-fence is located so that a straight cutter positioned to rotate tangent to the working face plane of the one sub-fence can produce a substantially flat surface on a workpiece fed from the other sub-fence face, into the cutter and onto the one sub-fence face.

10. The router table fence of claim 1, wherein the top spar has a top face orthogonal to the front face, the front faces of

11. The router table fence of claim 10, wherein each of the top spar front and top faces and the bottom spar front and bottom faces have a longitudinal T-slot therein.

13. The router table fence of claim 12, wherein the fixing means comprises at least one clamp for attachment to the fence and engagement with the router table top.

14. The router table fence of claim 12, wherein the fixing means comprises two clamps, each of which clamp has a body for contact with the top of the router table top, and, attached to the body:

- (a) a projection having a T-shaped cross section to be received in a T-shaped slot in the fence and
- (b) a foot through which a threaded rod extends to exert pressure against the underside of the router table top generally opposite the clamp body.

15. The router table fence of claim 1, further comprising a dust chute comprising:

- (a) an inlet for positioning adjacent to the fence,
- (b) a tubular extension communicating with the inlet for attachment to a dust removal system or vacuum cleaner and
- (c) at least one magnet affixed to the chute for attachment of the chute to ferrous metal surfaces.

16. The router table fence of claim 1, further comprising a safety shield for attachment to the fence, the shield comprising a substantially transparent shield member attached to a vertical arm for fixation to the front of the fence in a position so that the shield member is positioned generally above a router cutter protruding through the router table top.

17. The router table fence of claim 1, wherein the safety shield is made of polycarbonate plastic.

18. The router table fence of claim 1, wherein the fence has a front and the fence further comprises a hold-down assembly for mounting on the fence, the hold-down assembly comprising a body to which there is attached:

means for exerting pressure against a top of a workpiece to urge it against the top of the router table top, and means for exerting pressure against a side of a workpiece to urge it against the front of the fence.

19. The fence of claim 18, wherein the fence has at least one T-slot and the hold-down assembly attaches to the fence by engaging a T-slot in the fence.

20. The router table fence of claim 1, further comprising a micro-adjust stop for accurately repositioning one end of the fence, comprising a stop body for attachment to the router table top and a positioning screw threaded through the body for contact with a face of the fence in a range of locations determined by the position of the screw within the body and the location of the body on the router table top.

21. The router table fence of claim 20, further comprising longitudinal and rotational position indicating means on the positioning screw and, attached to the body, a cursor for establishing the longitudinal and rotational position of the screw relative to the body by reference to the position indicating means so that changes in position of the screw can be accurately determined.

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the positioning screw and spaced apart annular rings on the positioning screw and, attached to the body, a transparent plate having cursor marks for establishing the longitudinal and rotational position of the screw relative to the body by reference to the longitudinal marks and the annular rings so that changes in position of the screw can be accurately determined.

23. The router table fence of claim 1, further comprising a fixed stop usable to establish the position of the fence on the router table top to make it possible to remove the fence from the router table top and later return it to the same position, comprising:

a section of rod penetrated by a slot within which an edge of the router table top may be received and

a screw threaded into an axial, threaded hole in one end of the rod section so that an end of the screw may be tightened against a surface of the router table top when the edge of the router table top is received within the slot.

24. A router table fence for use with a router table top, comprising:

- (a) a top spar and
- (b) two bottom spars, each of which spars:
 - (i) has a top face, bottom face and two side faces and
 - (ii) is fabricated of extruded aluminum having a generally square cross-sectional shape with a laterally centered, longitudinal T-shaped slot in each face, and
 - (iii) first structure on a first face of one of the spars for engagement with second structure on an opposite face of another of the spars so that the one spar can slidably engage the other spar with at least a second face of the one spar maintained in substantially the same plane as a second face of the other spar.

25. The router table fence of claim 24, wherein the first structure comprises a pair of longitudinal ribs and the second structure comprises a second pair of longitudinal ribs in a position laterally offset from the first pair of ribs.

26. A method of accurately positioning a router table fence on a router table top relative to a router cutter protruding above the router table top, comprising the steps of:

- (a) fixing the router table fence in a first approximately correct position on the router table top with fence locks that attach to the fence and table top on opposite sides of the table,
- (b) taking a first test cut in a workpiece by passing a portion of the workpiece through the revolving router cutter while maintaining the workpiece in sliding contact with the fence,
- (c) positioning a micro-adjust fence stop against the front or back of the fence at one edge of the router table top
- (d) loosening the fence lock adjacent to the one edge of the router table top,
- (e) measuring on the workpiece a distance the fence position needs to move relative to the router cutter,
- (f) using the micro-adjust stop to reposition the fence contacting the micro-adjust stop by twice the distance, and
- (g) tightening the fence lock adjacent to the one edge of the router table top.

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